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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/724,002	YAMAZAKI ET AL.	
	Examiner	Art Unit	
	Karla Moore	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 April 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18 and 31-62* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18 and 31-62* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 November 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *0107*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 13, 31, 47, 51 and 59-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,319,321 to Hiraga et al. in view of U.S. Patent No. 4,405,487 to Harrah et al., U.S. Patent No. 6,001,413 to Matsuura et al. and U.S. Patent No. 5,328,336 to Nowbilski.

3. Hiraga et al. disclose a film deposition apparatus substantially as claimed in Figures 1-4, comprising: a stock chamber (1) for loading or unloading a substrate; a transferring chamber (200) including a mechanism (13) for transferring the substrate; a liquid phase film deposition chamber (3; abstract, column 11, rows 54 and 55) connected to said transferring chamber through a gate (11); and a calcining chamber (4). The apparatus may be used for depositing an electroluminescent material in the liquid phase (abstract and column 1, rows 15-16).

4. Although, the liquid phase film deposition chamber of Hiraga et al. is not provided with a mechanism for oxidizing an element belonging to Group 1 or 2 of the periodic table. It is noted that Hiraga et al. do teach that the liquid deposition must take place in

a sealed vessel free of floating particles and/or contaminated gases, where the contaminant gases include oxygen molecules and water vapor (column 13, rows 51-52).

5. Harrah et al. teach the use of a moisture getter comprising a readily oxidizable metal (such as Mg, a Group 2 metal; column 2, row 68) in a closed container for the purpose of scavenging moisture (column 1, rows 11-14).

6. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a mechanism for oxidizing an element belonging to Group 1 or Group 2 of the periodic table in Hiraga et al. in order to scavenge moisture within chamber as taught by Harrah et al.

7. With respect to claims 13 and 31, which specify a specific material to be deposited, Examiner notes that the courts have ruled that expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969).

8. Examiner also notes that Hiraga et al. disclose that the chamber is capable of depositing an EL material (column 9, rows 45-63).

9. Harrah et al. and Hiraga et al. disclose the invention substantially as claimed and as described above.

10. However, Harrah et al. and Hiraga et al. do not explicitly teach why one of ordinary skill in the art might combine two apparatus that to some may appear to individually provide solutions to a common problem.

11. Matsuura et al. teach that even when substrates are provided in a vacuum enclosure, over time contaminants and impurities may be introduced into the enclosure, thus causing failure or destabilization of the substrates (column 2, rows 17-35). Therefore, even if at some point in time the apparatus of Hiraga et al. is in a "clean" state, over time this state may become diminished. Thus, means for addressing the contaminants and/or impurities besides just providing a clean container at the outset would make sense.

12. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the apparatus/closed container of Hiraga et al. with a mechanism for oxidizing an element belonging Group 1 or 2 of the periodic table in order to scavenge moisture from the chamber that may be introduced after time has lapsed as taught by Harrah et al. and Matsuura et al.

13. Hiraga et al., Harrah et al. and Matsuura et al. disclose the invention substantially as claimed and as described above.

14. However, Hiraga et al., Harrah et al. and Matsuura et al. fail to teach mechanism for oxidizing is an oxidation cell having a lid, wherein said oxygen gettering agent is encapsulated (i.e. enclosed) by closing said lid.

15. Nowobilski teach providing a gettering material in a container (Figure 1, 1) with a closing means (5) that encapsulates (encloses) the gettering material when closed by the closing means for at least the purposes of preventing the getter material from

escaping and allowing the easy replacement of getter material once it is deactivated or no longer useful for removing undesirable gases (column 6, rows 22-31).

16. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the gettering material in a container with closing means that encapsulates (encloses) the gettering material when cloased by the closing means in Hiraga et al., Harrah et al. and Matsuura et al. in order to prevent the getter material from escaping and in order to allow the easy replacement of getter material once it is deactivated or no longer useful for removing undesirable gases as taught by Nowobilski.

17. The relied upon prior art discloses the invention substantially as claimed and as described above.

18. However, the relied upon prior art fails to teach a heating mechanism/heater for the oxidization cell.

19. Walter teaches providing a heater/heating mechanism for an oxidization mechanism comprising a getter material for the purpose of allowing the getter material to become at least partially molten, providing a liquid phase which is effective to preferentially react with any residual reactive oxygen present (column 5, rows 46-53).

20. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a heater/heating mechanism in the prior art of record in order to allow the getter material to become at least partially

molten, providing a liquid phase which is effective to preferentially react with any residual reactive oxygen present as taught by Walter.

21. The limitations of claims 59 and 60 are addressed above.

22. Claims 2 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al., Harrah et al. and Matsuura et al., Nowobilski as applied to claims 1, 13, 31, 47, 51 and 59-60 above, and further in view of U.S. Patent No. 5,310,410 to Begin et al.

23. Hiraga et al., Harrah et al. and Matsuura et al. and Nowobilski disclose the invention substantially as claimed and as described above.

24. However, Hiraga et al., Harrah et al. and Matsuura et al. and Nowobilski fail to teach an apparatus wherein an inside of said transferring chamber is kept under a reduced pressure and a liquid phase film deposition chamber is kept under atmospheric pressure or in a pressurized state.

25. Begin et al. disclose a multi-chamber apparatus in Figures 1 and 4, wherein each of the chambers (including the transfer chambers) are kept at a pressure selected based upon the particular process to be performed in the chamber for the purpose of providing a system with increased flexibility (column 1, rows 52 through column 2, row 18; column 4, rows 15-35).

26. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided individual chambers with pressures

selected based on the processes to be performed in Hiraga et al., Harrah et al. and Matsuura et al. and Nowobilski in order to provided a system with increased flexibility as taught by Begin et al.

27. Claims 3 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al., Harrah et al. and Matsuura et al. and Nowobilski as applied to claims 1, 13, 31, 47, 51 and 59-60 above, and further in view of U.S. Patent No. 3,931,789 to Kakei et al.

28. Hiraga et al., Harrah et al. and Matsuura et al. and Nowobilski disclose the invention substantially as claimed and as described above.

29. However, Hiraga et al., Harrah et al. and Matsuura et al. and Nowobilski fail to teach that said calcining chamber is provided with a mechanism for turning said substrate upside down.

30. Kakei et al. disclose a heating chamber provided with a mechanism for turning a substrate upside down for the purpose of facilitating successive applications of thin film coating on opposite surfaces of substrates (abstract).

31. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a calcining (heating) chamber with a turning mechanism in Hiraga et al., Harrah et al. and Matsuura et al. and Nowobilski in order to facilitate successive applications of thin film coating on opposite surfaces of substrates as taught by Kakei et al.

32. Claims 4, 34 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,319,321 to Hiraga et al., in view of U.S. Patent No. 4,405,487 to Harrah et al., U.S. Patent No. 6,001,413 to Matsuura et al. and in view of U.S. Patent No. 6,149,392 to Conte and U.S. Patent No. 5,328,336 to Nowbilski.

33. Hiraga et al. disclose the invention substantially as claimed and comprising: a stock chamber (1) for loading or unloading a substrate; a transferring chamber (200) including a mechanism (13) for transferring the substrate; a liquid phase film deposition chamber connected to said transferring chamber through a gate (11); and a calcining chamber (4). The apparatus may be used for depositing an electroluminescent material.

34. Although, the liquid phase film deposition chamber of Hiraga et al. is not provided with a mechanism for oxidizing an element belonging to Group 1 or 2 of the periodic table. It is noted that Hiraga et al. do teach that the liquid deposition must take place in a sealed vessel free of floating particles and/or contaminated gases, where the contaminant gases include oxygen molecules and water vapor (column 13, rows 51-52).

35. Harrah et al. teach the use of a moisture getter comprising a readily oxidizable metal (such as Mg, a Group 2 metal; column 2, row 68) in a closed container for the purpose of scavenging moisture (column 1, rows 11-14).

36. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a mechanism for oxidizing an element belonging to Group 1 or Group 2 of the periodic table in Hiraga et al. in order to scavenge moisture within chamber as taught by Harrah et al.

37. Harrah et al. and Hiraga et al. disclose the invention substantially as claimed and as described above.

38. However, Harrah et al. and Hiraga et al. do not explicitly teach why one of ordinary skill in the art might combine two apparatus that to some may appear to individually provide solutions to a common problem.

39. Matsuura et al. teach that even when substrates are provided in a vacuum enclosure, over time contaminants and impurities may be introduced into the enclosure, thus causing failure or destabilization of the substrates (column 2, rows 17-35). Therefore, even if at some point in time the apparatus of Hiraga et al. is in a "clean" state, over time this state may become diminished. Thus, means for addressing the contaminants and/or impurities besides just providing a clean container at the outset would make sense.

40. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the apparatus/closed container of Hiraga et al. with a mechanism for oxidizing an element belonging Group 1 or 2 of the periodic table in order to scavenge moisture from the chamber that may be introduced after time has lapsed as taught by Harrah et al. and Matsuura et al.

41. Hiraga et al., Harrah et al. and Matsuura et al. disclose the invention substantially as claimed and as described above.

42. However, Hiraga et al., Harrah et al. and Matsuura et al. fail to teach said oxidizing mechanism provided via a piping.

43. Conte discloses multiple chamber and getter (oxidizing mechanism) configurations in Figures 5-7, including a configuration where the getter is connected to the chamber via piping. Conte further discloses that ideally particles of getter material are prevented from moving through the chamber (column 5, rows 51-65).

44. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a getter connected to a chamber via piping in Hiraga et al., Harrah et al. and Matsuura et al. in order to prevent particles of getter material from moving through the chamber as taught by Conte.

45. Hiraga et al., Harrah et al. and Matsuura et al. and Conte disclose the invention substantially as claimed and as described above.

46. However, Hiraga et al., Harrah et al., Matsuura et al. and Conte fail to teach mechanism for oxidizing is an oxidation cell having a lid, wherein said oxygen gettering agent is encapsulated (i.e. enclosed) by closing said lid.

47. Nowobilski teach providing a gettering material in a container (Figure 1, 1) with a closing means (5) that encapsulates (encloses) the gettering material when closed by the closing means for at least the purposes of preventing the getter material from escaping and allowing the easy replacement of getter material once it is deactivated or no longer useful for removing undesirable gases (column 6, rows 22-31).

48. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the gettering material in a container with closing means that encapsulates (encloses) the gettering material when cloased by

the closing means in Hiraga et al., Harrah et al., Matsuura et al. and Conte in order to prevent the getter material from escaping and in order to allow the easy replacement of getter material once it is deactivated or no longer useful for removing undesirable gases as taught by Nowobilski.

49. With respect to claim 34, which is drawn solely to an intended use of the apparatus, the courts have ruled--a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

50. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al., Harrah et al., Matsuura et al. and Conte and Nowobilski as applied to claims 4, 34 and 48 above, and further in view of U.S. Patent No. 5,310,410 to Begin et al.

51. Hiraga et al., Harrah et al., Matsuura et al. and Conte and Nowobilski disclose the invention substantially as claimed and as described above.

52. However, Hiraga et al., Harrah et al., Matsuura et al. and Conte and Nowobilski fail to teach an apparatus wherein an inside of said transferring chamber is kept under a reduced pressure and a liquid phase film deposition chamber is kept under atmospheric pressure or in a pressurized state.

53. Begin et al. disclose a multi-chamber apparatus in Figures 1 and 4, wherein each of the chambers (including the transfer chambers) are kept at a pressure selected based upon the particular process to be performed in the chamber for the purpose of providing a system with increased flexibility (column 1, rows 52 through column 2, row 18; column 4, rows 15-35).

54. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided individual chambers with pressures selected based on the processes to be performed in Hiraga et al., Harrah et al., Matsuura et al. and Conte and Nowobilski in order to provided a system with increased flexibility as taught by Begin et al.

55. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al., Harrah et al., Matsuura et al. and Conte as applied to claims 4, 34 and 48 above, and further in view of U.S. Patent No. 3,931,789 to Kakei et al.

56. Hiraga et al., Harrah et al., Matsuura et al. and Conte and Nowobilski disclose the invention substantially as claimed and as described above.

57. However, Hiraga et al., Harrah et al., Matsuura et al. and Conte and Nowobilski fail to teach that said calcining chamber is provided with a mechanism for turning said substrate upside down.

58. Kakei et al. disclose a heating chamber provided with a mechanism for turning a substrate upside down for the purpose of facilitating successive applications of thin film coating on opposite surfaces of substrates (abstract).

59. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a calcining (heating) chamber turning mechanism in Hiraga et al., Harrah et al., Matsuura et al. and Conte and Nowobilski in order to facilitate successive applications of thin film coating on opposite surfaces of substrates as taught by Kakei et al.

60. Claims 7-8, 16-17, 37, 49 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,319,321 to Hiraga et al., in view of U.S. Patent No. 4,405,487 to Harrah et al., U.S. Patent No. 6,001,413 to Matsuura et al., U.S. Patent No. 5,310,410 to Begin et al. and U.S. Patent No. 5,328,336 to Nowbilski.

61. With respect to claims 7 and 16, Hiraga et al. discloses the invention substantially as claimed and comprising: a stock chamber (1) for loading or unloading a substrate; a transferring chamber (200) including a mechanism (13) for transferring the substrate; a liquid phase film deposition chamber connected to said transferring chamber through a gate (11); and a calcining chamber (4). The apparatus may be used for depositing an electroluminescent material.

62. Although, the liquid phase film deposition chamber of Hiraga et al. is not provided with a mechanism for oxidizing an element belonging to Group 1 or 2 of the periodic table. It is noted that Hiraga et al. do teach that the liquid deposition must take place in a sealed vessel free of floating particles and/or contaminated gases, where the contaminant gases include oxygen molecules and water vapor (column 13, rows 51-52).

63. Harrah et al. teach the use of a moisture getter comprising a readily oxidizable metal (such as Mg, a Group 2 metal; column 2, row 68) in a closed container for the purpose of scavenging moisture (column 1, rows 11-14).

64. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a mechanism for oxidizing an element belonging to Group 1 or Group 2 of the periodic table in Hiraga et al. in order to scavenge moisture within chamber as taught by Harrah et al.

65. Harrah et al. and Hiraga et al. disclose the invention substantially as claimed and as described above.

66. However, Harrah et al. and Hiraga et al. do not explicitly teach why one of ordinary skill in the art might combine two apparatus that to some may appear to individually provide solutions to a common problem.

67. Matsuura et al. teach that even when substrates are provided in a vacuum enclosure, over time contaminants and impurities may be introduced into the enclosure, thus causing failure or destabilization of the substrates (column 2, rows 17-35). Therefore, even if at some point in time the apparatus of Hiraga et al. is in a "clean" state, over time this state may become diminished. Thus, means for addressing the contaminants and/or impurities besides just providing a clean container at the outset would make sense.

68. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the apparatus/closed container of

Hiraga et al. with a mechanism for oxidizing an element belonging Group 1 or 2 of the periodic table in order to scavenge moisture from the chamber that may be introduced after time has lapsed as taught by Harrah et al. and Matsuura et al.

69. As described above, Hiraga et al., Harrah et al. and Matsuura et al. disclose the invention substantially as claimed.

70. However Hiraga et al., Harrah et al. Matsuura et al. fail to disclose an additional transfer chamber connected through said stock chamber through a gate or a vapor phase film deposition chamber connected to one of said two transferring chambers through a gate.

71. Begin et al. disclose a multi-chamber apparatus comprising two transfer chambers (14) connected to a stock chamber (26, Figure 4) through a gate (32, Figure 1; 90) and a plurality of vapor deposition chambers/first chambers (38, 40, 42, 80, 82) in an arrangement for the purpose of providing greater flexibility in the types of operations performed (column 2, rows 28-43). Although, both of the transfer chambers are not directly connected to the stock chamber through a single gate, they are connected through a gate.

72. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an additional transfer chamber and a vapor deposition chamber in Hiraga et al., Harrah et al. and Matsuura et al. in order to achieve an arrangement providing greater flexibility in the types of operations performed as taught by Begin et al.

73. With respect to claims 8 and 17, Hiraga et al., Harrah et al., Matsuura et al. and Begin et al. disclose a stock chamber, a transferring chamber and a liquid phase film deposition chamber provided with a mechanism for oxidizing an element belonging to Group 1 or 2 of the periodic table—as described above.

74. However, Hiraga et al. and Harrah et al. fail to teach an apparatus wherein an inside of said transferring chamber is kept under a reduced pressure and a liquid phase film deposition chamber is kept under atmospheric pressure or in a pressurized state.

75. Begin et al. disclose a multi-chamber apparatus in Figures 1 and 4, wherein each of the chambers (including the transfer chambers) are kept at a pressure selected based upon the particular process to be performed in the chamber for the purpose of providing a system with increased flexibility (column 1, rows 52 through column 2, row 18; column 4, rows 15-35).

76. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided individual chambers with pressures selected based on the processes to be performed in Hiraga et al., Harrah et al., Matsuura et al. and Begin et al. in order to provided a system with increased flexibility as taught by Begin et al.

77. Hiraga et al., Harrah et al. and Matsuura et al. and Begin et al. disclose the invention substantially as claimed and as described above.

78. However, Hiraga et al., Harrah et al., Matsuura et al. and Begin et al. fail to teach mechanism for oxidizing is an oxidation cell having a lid, wherein said oxygen gettering agent is encapsulated (i.e. enclosed) by closing said lid.

79. Nowobilski teach providing a gettering material in a container (Figure 1, 1) with a closing means (5) that encapsulates (encloses) the gettering material when closed by the closing means for at least the purposes of preventing the getter material from escaping and allowing the easy replacement of getter material once it is deactivated or no longer useful for removing undesirable gases (column 6, rows 22-31).

80. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the gettering material in a container with closing means that encapsulates (encloses) the gettering material when cloased by the closing means in , Hiraga et al., Harrah et al., Matsuura et al. and Begin et al. in order to prevent the getter material from escaping and in order to allow the easy replacement of getter material once it is deactivated or no longer useful for removing undesirable gases as taught by Nowobilski.

81. With respect to claim 37, which is drawn solely to an intended use of the apparatus, the courts have ruled--a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987)

82. Claims 9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al., Harrah et al., Matsuura et al. and Begin et al. and Nowobilski as applied to claims 7-8, 16-17, 37, 49 and 52 above, and further in view of U.S. Patent No. 3,931,789 to Kakei et al.

83. Hiraga et al., Harrah et al., Matsuura et al. and Begin et al. and Nowobilski disclose the invention substantially as claimed and as described above.

84. However, Hiraga et al., Harrah et al., Matsuura et al. and Begin et al. and Nowobilski fail to teach that said calcining chamber is provided with a mechanism for turning said substrate upside down.

85. Kakei et al. disclose a heating chamber provided with a mechanism for turning a substrate upside down for the purpose of facilitating successive applications of thin film coating on opposite surfaces of substrates (abstract).

86. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a calcining (heating) chamber turning mechanism in Hiraga et al., Harrah et al., Matsuura et al. and Begin et al. and Nowobilski in order to facilitate successive applications of thin film coating on opposite surfaces of substrates as taught by Kakei et al.

87. Claims 10-11, 40 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,319,321 to Hiraga et al., in view of U.S. Patent No. 4,405,487 to Harrah et al., U.S. Patent No. 6,001,413 to Matsuura et al., U.S. Patent

No. 5,310,410 to Begin et al. and U.S. Patent No. 6,149,392 to Conte and U.S. Patent No. 5,328,336 to Nowbilski.

88. With respect to claim 10, Hiraga et al. discloses the invention substantially as claimed and comprising: a stock chamber (1) for loading or unloading a substrate; a transferring chamber (200) including a mechanism (13) for transferring the substrate; a liquid phase film deposition chamber connected to said transferring chamber through a gate (11); and a calcining chamber (4). The apparatus may be used for depositing an electroluminescent material.

89. Although, the liquid phase film deposition chamber of Hiraga et al. is not provided with a mechanism for oxidizing an element belonging to Group 1 or 2 of the periodic table. It is noted that Hiraga et al. do teach that the liquid deposition must take place in a sealed vessel free of floating particles and/or contaminated gases, where the contaminant gases include oxygen molecules and water vapor (column 13, rows 51-52).

90. Harrah e et al. teach the use of a moisture getter comprising a readily oxidizable metal (such as Mg, a Group 2 metal; column 2, row 68) in a closed container for the purpose of scavenging moisture (column 1, rows 11-14).

91. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a mechanism for oxidizing an element belonging to Group 1 or Group 2 of the periodic table in Hiraga et al. in order to scavenge moisture within chamber as taught by Harrah et al.

92. Harrah et al. and Hiraga et al. disclose the invention substantially as claimed and as described above.

93. However, Harrah et al. and Hiraga et al. do not explicitly teach why one of ordinary skill in the art might combine two apparatus that to some may appear to individually provide solutions to a common problem.

94. Matsuura et al. teach that even when substrates are provided in a vacuum enclosure, over time contaminants and impurities may be introduced into the enclosure, thus causing failure or destabilization of the substrates (column 2, rows 17-35). Therefore, even if at some point in time the apparatus of Hiraga et al. is in a "clean" state, over time this state may become diminished. Thus, means for addressing the contaminants and/or impurities besides just providing a clean container at the outset would make sense.

95. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the apparatus/closed container of Hiraga et al. with a mechanism for oxidizing an element belonging Group 1 or 2 of the periodic table in order to scavenge moisture from the chamber that may be introduced after time has lapsed as taught by Harrah et al. and Matsuura et al.

78. Hiraga et al., Harrah et al. and Matsuura et al. disclose the invention substantially as claimed and as described above.

79. However, Hiraga et al., Harrah et al. and Matsuura et al. fail to disclose an additional transfer chamber connected through said stock chamber through a gate or a

vapor phase film deposition chamber connected to one of said two transferring chambers through a gate.

80. Begin et al. disclose a multi-chamber apparatus comprising two transfer chambers (14) connected to a stock chamber (26, Figure 4) through a gate (32, Figure 1; 90) and a plurality of vapor deposition chambers/first chambers (38, 40, 42, 80, 82) in an arrangement for the purpose of providing greater flexibility in the types of operations performed (column 2, rows 28-43). Although, both of the transfer chambers are not directly connected to the stock chamber through a single gate, they are connected through a gate.

81. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an additional transfer chamber and a vapor deposition chamber in Hiraga et al., Harrah et al. and Matsuura et al. in order to achieve an arrangement providing greater flexibility in the types of operations performed as taught by Begin et al.

82. Hiraga et al., Harrah et al., Matsuura et al. and Begin et al. disclose the invention substantially as claimed.

83. However, Hiraga et al., Harrah et al., Matsuura et al. and Begin et al. fail to teach said oxidizing mechanism provided via a piping.

84. Conte discloses multiple chamber and getter (oxidizing mechanism) configurations in Figures 5-7, including a configuration where the getter is connected to

the chamber via piping. Conte further discloses that ideally particles of getter material are prevented from moving through the chamber (column 5, rows 51-65).

85. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a getter connected to a chamber via piping Harrah et al. in Hiraga et al., Harrah et al., Matsuura et al. and Begin et al. in order to prevent particles of getter material from moving through the chamber as taught by Conte.

96. Hiraga et al., Harrah et al., Matsuura et al., Begin et al. and Conte disclose the invention substantially as claimed and as described above.

97. However, Hiraga et al., Harrah et al., Matsuura et al. Begin et al. and Conte fail to teach mechanism for oxidizing is an oxidation cell having a lid, wherein said oxygen gettering agent is encapsulated (i.e. enclosed) by closing said lid.

98. Nowobilski teach providing a gettering material in a container (Figure 1, 1) with a closing means (5) that encapsulates (encloses) the gettering material when closed by the closing means for at least the purposes of preventing the getter material from escaping and allowing the easy replacement of getter material once it is deactivated or no longer useful for removing undesirable gases (column 6, rows 22-31).

99. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the gettering material in a container with closing means that encapsulates (encloses) the gettering material when closed by the closing means in Hiraga et al., Harrah et al., Matsuura et al. Begin et al. and Conte

in order to prevent the getter material from escaping and in order to allow the easy replacement of getter material once it is deactivated or no longer useful for removing undesirable gases as taught by Nowobilski.

86. With respect to claim 11, Begin et al. disclose a multi-chamber apparatus in Figures 1 and 4, wherein each of the chambers (including the transfer chambers) are kept at a pressure selected based upon the particular process to be performed in the chamber for the purpose of providing a system with increased flexibility (column 1, rows 52 through column 2, row 18; column 4, rows 15-35).

87. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided individual chambers with pressures selected based on the processes to be performed in order to provided a system with increased flexibility as taught by Begin et al.

88. With respect to claim 40, which is drawn solely to an intended use of the apparatus, the courts have ruled--a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

89. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al., Harrah et al., Matsuura et al., Begin et al., Conte and Nowobilski as applied to claims 10, 11, 40 and 50 above, and further in view of U.S. Patent No. 3,931,789 to Kakei et al.

90. Hiraga et al., Harrah et al., Matsuura et al. Begin et al., Conte and Nowobilski disclose the invention substantially as claimed and as described above.

91. However, Hiraga et al., Harrah et al., Matsuura et al. Begin et al., Conte and Nowobilski fail to teach that said calcining chamber is provided with a mechanism for turning said substrate upside down.

92. Kakei et al. disclose a heating chamber provided with a mechanism for turning a substrate upside down for the purpose of facilitating successive applications of thin film coating on opposite surfaces of substrates (abstract).

93. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a calcining (heating) chamber turning mechanism in Hiraga et al., Harrah et al., Matsuura et al. Begin et al., Conte and Nowobilski in order to facilitate successive applications of thin film coating on opposite surfaces of substrates as taught by Kakei et al.

94. Claims 32-33 and 61-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al., Harrah et al., Matsuura et al. and Nowobilski as applied to claims 1, 13, 31, 47 and 51 above, and further in view of U.S. Patent No. 6,124,215 to Zheng.

95. Hiraga et al., Harrah et al., Matsuura et al. and Nowobilski disclose the invention substantially as claimed and as described above.

96. However, Hiraga et al., Harrah et al., Matsuura et al. and Nowobilski fail to teach the liquid phase deposition chamber provided with a spin coater and a nozzle for forming a layer.

97. Zheng teaches the use of a spin coater for the purpose of dispersing material onto the surface of a wafer substrate (column 2, rows 39-41) and a nozzle (Figure 1, 20) for the purpose of dispensing material onto the surface of the wafer substrate (column 3, rows 52-57).

98. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a spin coater in Hiraga et al., Harrah et al., Matsuura et al. and Nowobilski in order to disperse material onto the surface of a wafer surface of a wafer substrate and to have provided a nozzle in Hiraga et al., Harrah et al., Matsuura et al. and Nowobilski in order to dispense material onto the surface of the wafer substrate as taught by Zheng.

99. Claims 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al., Harrah et al. Matsuura et al., Conte and Nowobilski as applied to claims 4, 34 and 38 above, and further in view of U.S. Patent No. 6,124,215 to Zheng. Hiraga et al., Harrah et al. Matsuura et al., Conte and Nowobilski disclose the invention substantially as claimed and as described above.

100. However, Hiraga et al., Harrah et al. Matsuura et al., Conte and Nowobilski fail to teach the liquid phase deposition chamber provided with a spin coater and a nozzle for forming a layer.

101. Zheng teaches the use of a spin coater for the purpose of dispersing material onto the surface of a wafer substrate (column 2, rows 39-41) and a nozzle (Figure 1, 20) for the purpose of dispensing material onto the surface of the wafer substrate (column 3, rows 52-57).

102. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a spin coater in Hiraga et al., Harrah et al. Matsuura et al., Conte and Nowobilski in order to disperse material onto the surface of a wafer surface of a wafer substrate and to have provided a nozzle Hiraga et al., Harrah et al. Matsuura et al., Conte and Nowobilski in order to dispense material onto the surface of the wafer substrate as taught by Zheng.

103. Claims 38-39 and 45-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al., Harrah et al., Matsuura et al., Begin et al. and Nowobilski as applied to claims 7-8, 16-17, 37, 49 and 52 above, and further in view of U.S. Patent No. 6,124,215 to Zheng.

104. Hiraga et al., Harrah et al., Matsuura et al., Begin et al. and Nowobilski disclose the invention substantially as claimed and as described above.

105. However, Hiraga et al., Harrah et al., Matsuura et al., Begin et al. and Nowobilski fail to teach the liquid phase deposition chamber provided with a spin coater and a nozzle for forming a layer.

106. Zheng teaches the use of a spin coater for the purpose of dispersing material onto the surface of a wafer substrate (column 2, rows 39-41) and a nozzle (Figure 1, 20) for the purpose of dispensing material onto the surface of the wafer substrate (column 3, rows 52-57).

107. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a spin coater Hiraga et al., Harrah et al., Matsuura et al., Begin et al. and Nowobilski in order to disperse material onto the surface of a wafer surface of a wafer substrate and to have provided a nozzle in Hiraga et al., Harrah et al., Matsuura et al., Begin et al. and Nowobilski in order to dispense material onto the surface of the wafer substrate as taught by Zheng.

108. Claims 41 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al., Harrah et al., Matsuura et al. Begin et al., Conte and Nowobilski as applied to claims 10-11, 40 and 50 above, and further in view of U.S. Patent No. 6,124,215 to Zheng.

109. Hiraga et al., Harrah et al., Matsuura et al. Begin et al., Conte and Nowobilski disclose the invention substantially as claimed and as described above.

110. However, Hiraga et al., Harrah et al., Matsuura et al. Begin et al., Conte and Nowobilski fail to teach the liquid phase deposition chamber provided with a spin coater and a nozzle for forming a layer.

111. Zheng teaches the use of a spin coater for the purpose of dispersing material onto the surface of a wafer substrate (column 2, rows 39-41) and a nozzle (Figure 1, 20) for the purpose of dispensing material onto the surface of the wafer substrate (column 3, rows 52-57).

112. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a spin coater in Hiraga et al., Harrah et al., Matsuura et al. Begin et al., Conte and Nowobilski in order to disperse material onto the surface of a wafer surface of a wafer substrate and to have provided a nozzle in Hiraga et al., Harrah et al., Matsuura et al. Begin et al., Conte and Nowobilski in order to dispense material onto the surface of the wafer substrate as taught by Zheng.

113. Claims 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al., Harrah et al., Matsuura et al. and Nowobilski as applied to claims 1, 13, 31, 47, 51 and 59-60 above, and further in view of U.S. Patent No. 6,124,215 to Zheng.

114. Hiraga et al., Harrah et al., Matsuura et al. and Nowobilski disclose the invention substantially as claimed and as described above.

115. However, Hiraga et al., Harrah et al., Matsuura et al. and Nowobilski fail to teach the EL liquid phase deposition chamber provided with a spin coater and a nozzle for forming a layer.

116. Zheng teaches the use of a spin coater for the purpose of dispersing material onto the surface of a wafer substrate (column 2, rows 39-41) and a nozzle (Figure 1, 20) for the purpose of dispensing material onto the surface of the wafer substrate (column 3, rows 52-57).

117. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a spin coater in Hiraga et al., Harrah et al., Matsuura et al. and Nowobilski in order to disperse material onto the surface of a wafer surface of a wafer substrate and to have provided a nozzle in Hiraga et al., Harrah et al., Matsuura et al. and Nowobilski in order to dispense material onto the surface of the wafer substrate as taught by Zheng.

118. Claims 53 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al., Harrah et al. and Matsuura et al. and Nowobilski as applied to claims 1, 13, 31, 47, 51 and 59-60 above, and further in view of U.S. Patent No. 4,118,542 to Walter.

119. Hiraga et al., Harrah et al. and Matsuura et al. and Nowobilski disclose the invention substantially as claimed and as described above.

120. However, Hiraga et al., Harrah et al. and Matsuura et al. and Nowobilski fail to teach a heating mechanism/heater for the oxidization cell.

121. Walter teaches providing a heater/heating mechanism for an oxidization mechanism comprising a getter material for the purpose of allowing the getter material to become at least partially molten, providing a liquid phase which is effective to preferentially react with any residual reactive oxygen present (column 5, rows 46-53).

122. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a heater/heating mechanism in the prior art of record in order to allow the getter material to become at least partially molten, providing a liquid phase which is effective to preferentially react with any residual reactive oxygen present as taught by Walter.

123. Claim 54 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al., Harrah et al., Matsuura et al. and Conte and Nowobilski as applied to claims 4, 34 and 48 above, and further in view of U.S. Patent No. 4,118,542 to Walter.

124. Hiraga et al., Harrah et al., Matsuura et al. and Conte and Nowobilski disclose the invention substantially as claimed and as described above.

125. However, Hiraga et al., Harrah et al., Matsuura et al. and Conte and Nowobilski fail to teach a heating mechanism/heater for the oxidization cell.

126. Walter teaches providing a heater/heating mechanism for an oxidization mechanism comprising a getter material for the purpose of allowing the getter material to become at least partially molten, providing a liquid phase which is effective to preferentially react with any residual reactive oxygen present (column 5, rows 46-53).

127. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a heater/heating mechanism in the prior art of record in order to allow the getter material to become at least partially molten, providing a liquid phase which is effective to preferentially react with any residual reactive oxygen present as taught by Walter.

128. Claims 55 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al., Harrah et al., Matsuura et al. and Begin et al. and Nowobilski as applied to claims 7-8, 16-17, 37, 49 and 52 above, and further in view of U.S. Patent No. 4,118,542 to Walter.

129. Hiraga et al., Harrah et al., Matsuura et al. and Begin et al. and Nowobilski disclose the invention substantially as claimed and as described above.

130. However, Hiraga et al., Harrah et al., Matsuura et al. and Begin et al. and Nowobilski fail to teach a heating mechanism/heater for the oxidization cell.

131. Walter teaches providing a heater/heating mechanism for an oxidization mechanism comprising a getter material for the purpose of allowing the getter material to become at least partially molten, providing a liquid phase which is effective to preferentially react with any residual reactive oxygen present (column 5, rows 46-53).

132. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a heater/heating mechanism in the prior art of record in order to allow the getter material to become at least partially

molten, providing a liquid phase which is effective to preferentially react with any residual reactive oxygen present as taught by Walter.

133. Claim 56 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraga et al., Harrah et al., Matsuura et al., Begin et al., Conte and Nowobilski as applied to claims 10, 11, 40 and 50 above, and further in view of U.S. Patent No. 4,118,542 to Walter.

134. Hiraga et al., Harrah et al., Matsuura et al. Begin et al., Conte and Nowobilski disclose the invention substantially as claimed and as described above.

135. However, Hiraga et al., Harrah et al., Matsuura et al. Begin et al., Conte and Nowobilski fail to teach a heating mechanism/heater for the oxidization cell.

136. Walter teaches providing a heater/heating mechanism for an oxidization mechanism comprising a getter material for the purpose of allowing the getter material to become at least partially molten, providing a liquid phase which is effective to preferentially react with any residual reactive oxygen present (column 5, rows 46-53).

137. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a heater/heating mechanism in the prior art of record in order to allow the getter material to become at least partially molten, providing a liquid phase which is effective to preferentially react with any residual reactive oxygen present as taught by Walter.

Response to Arguments

138. Applicant's other arguments filed 18 September 2006 have been considered, but they are not persuasive.

139. The recitation "wherein said oxygen gettering agent is encapsulated by closing said lid". The gettering agent of Nowobilski is also encapsulated by closing the lid of the container, as explained above, regardless of the material from which the container holding the material is constructed. A porosity of the container does not prevent a getter from being encapsulated. Examiner notes that the pending claims do not recite that "the getter is gas-tightly sealed in the container when the container is closed by the lid", nor does the phrase "wherein said oxygen gettering agent is encapsulated by closing said lid" necessitate such an interpretation of the pending claims.

Conclusion

140. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent No. 4,272,259 teaches providing for a gas-tight on a gettering container to prevent premature combination of a getter material with sorbable gas components.

141. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See

MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Karla Moore
Primary Examiner
Art Unit 1763
19 July 2007